

REMARKS/ARGUMENTS

Claims xx are pending.

Following is a summary of the claims rejections raised in the Office action:

Claims 47, 52, 57, 70, 71, 88, and 130-139 were rejected under 35 U.S.C. § 112, as failing to comply with the written description requirement and failing comply with the enablement requirement.

Claims 37, 56, 75, 83, 90, 92, and 130 - 139 were rejected under 35 U.S.C. § 112, as failing to comply with the written description requirement and failing comply with the enablement requirement.

Claims 105, 179, and 180 were rejected under 35 U.S.C. § 112, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention and recite the limitation "said amount of semiconductor material" in each of their respective lines 2.

Claims 26 - 33, 35, 36, 38, 39, 43, 44, 49 - 51, 53 - 55, 58 - 62, 64 - 67, 79 - 82, 86, 89 - 91, 93, 98 - 102, 142, 143, 145, 151 - 153, 156 - 158, 164 - 168, 171, 173 - 178, and 189 were rejected under 35 U.S.C. § 102(b) for allegedly being anticipated by Tai, U.S. Patent No. 4,670,770.

Claims 26, 30, 34, 39 - 42, 48, 49, 86, 104, 106 - 109, 123 - 129, 140, 141, 144, 146 - 150, 172, and 186 - 188 were rejected under 35 U.S.C. § 102(b) for allegedly being anticipated by Ng et al., Reg. No. H208.

Claims 45, 46, 94 - 97, and 110 were rejected under 35 U.S.C. § 103(a) for allegedly being unpatentable over Ng et al., in view of Fang et al., IBM Technical Disclosure.

Claims 63, 87, 154, 155, 169, 170, and 190 - 192 were rejected under 35 U.S.C. § 103(a) for allegedly being unpatentable over Tai in view of Gardner et al., U.S. Patent No. 5,055,892.

Claim 68 is rejected under 35 U.S.C. 103(a) for allegedly being unpatentable over Tai in view of Ng et al..

Claims 69, 84, 85, 94 - 97, and 103 were rejected under 35 U.S.C. § 103(a) for allegedly being unpatentable over Tai in view of Fang et al.

Claims 72 - 74, 76 - 78, 159, and 160 were rejected under 35 U.S.C. § 103(a) for allegedly being unpatentable over Tsunetsugu et al., JP No. 05304306 in view of Gardner et al.

Claims 87, 169, and 170 were rejected under 35 U.S.C. § 103(a) for allegedly being unpatentable over Ng et al. in view of Gardner et al.

Claims 111 - 122 and 181 - 185 were rejected under 35 U.S.C. § 103(a) for allegedly being unpatentable over Fang et al. in view of Tai.

Section 112, First Paragraph Rejection of Claims 47, 52, 57, 70, 71, 88, and 130-139

The rejection begins on page 3 of the Office action.

Claims 47, 70, and 130 - 134 have been amended to recite a laser. The specification as originally filed clearly enables the subject matter now claimed. For example, kindly refer to page 4, lines 1 - 9, to page 17, lines 23 - 36, and to page 24, lines 1 - 9. It is believed that the specification discloses sufficient specifics as to allow one of ordinary skill in the art to practice the inventions recited in claims 47, 70, and 130 - 134.

Claims 57, 71, and 135 - 139 have been canceled without prejudice. It is acknowledged that these claims can be pursued at a later time during the pendency of the instant application.

Claims 52 and 88 as previously presented are believed to be enabled in the specification. For example, claim 52 a previously presented recited: "said sloped sides have a slope greater than about twenty degrees relative to a line normal to said top surface." The specification describes shaped blocks which "self-align and settle into the recessed regions." *Page 7, line 29*. Then on page 11, lines 37 - 38, there is discussion of an embodiment of the shaped blocks in which "[e]ach side creates an angle between about 20° and about 90°." It is earnestly submitted this clearly supports "a slope greater than about twenty degrees."

Nonetheless, in order to advance the examination of the instant application, claims 52 and 88 have been amended without prejudice to recite 40° to 60°, which the Examiner acknowledged is disclosed. It is understood that subject matter recited in the previously

presented claims 52 and 88 can be pursued at a later time during the pendency of the instant application.

The Section 112, First Paragraph rejection of claims 47, 52, 57, 70, 71, 88, and 130-139 is believed to be overcome.

Section 112, First Paragraph Rejection of Claims 37, 56, 75, 83, 90, 92, and 130 - 139

The rejection begins on page 5 of the Office action.

Claims 37, 56, 75, and 83 are believed to be enabled in the specification. The invention is directed to shaped blocks such as recited in base claim 26, for example. The specification discloses how such blocks can be manufactured and used. The material gallium arsenide was used in the description of the various illustrative embodiments of the invention. However, Applicant was in possession of additional embodiments of the invention, and had disclosed as much in the specification. For example, claim 37 recites: "wherein said electronic device comprises a group II-VI compound." Kindly see, for example, page 5, lines 39 - 42, and page 18, lines 11 - 14. Applicant clearly contemplated that "[s]uch blocks may also comprise ... other group III-V and II-VI compounds." *Page 18, lines 11 - 14*. Applicant teaches how to form shaped blocks. Applicant discloses illustrative typical dimensions of the shaped blocks that can be formed. Applicant discloses that various materials can be used. It is earnestly submitted that one of ordinary skill in the art will understand the specific processing that is needed to manipulate the alternate materials disclosed by Applicant in practicing the present invention. It is settled law that an inventor is not required to disclose every detail of the invention, only enough that would allow one of ordinary skill in the art to use and practice the invention. It is respectfully submitted that the disclosed alternate materials, including group II-VI compounds, are within the scope of knowledge of one of ordinary skill in the art to which the present invention pertains.

Claims 90 and 92 have been canceled without prejudice. It is acknowledged that these claims can be pursued at a later time during the pendency of the instant application.

Claims 130 - 139 have been amended as discussed above.

The Section 112, First Paragraph rejection of claims 37, 56, 75, 83, 90, 92, and 130 - 139 is believed to be overcome.

Section 112, Second Paragraph Rejection of Claims 105, 179, and 180

The rejection begins on page 7 of the Office action.

Claims 105, 179, and 180 have been rejected based on lack of antecedent basis.

The claims have been amended, and are believed to overcome the rejection.

Section 102 Rejection (Tai) - Claims 26 - 33, 35, 36, 38, 39, 43, 44, 49 - 51, 53 - 55, 58 - 62, 64 - 67, 79 - 82, 86, 89 - 91, 93, 98 - 102, 142, 143, 145, 151 - 153, 156 - 158, 164 - 168, 171, 173 - 178, and 189

The rejection begins on page 8 of the Office action.

Independent claims 26, 49, 59, 79, 86, 99, and 189 have been amended. The claims depending from these independent claims are believed to be allowable based on the allowability of their respective base claims.

The present invention is directed to electronic devices. An aspect of the present invention, as recited in claim 26 for example, is the electronic device has first and second surfaces and "having a beveled side connecting said first surface to said second surface." The electronic device further has "electronic structures formed on said second surface" which is larger than the first surface. Illustrative embodiments of this aspect of the present invention are shown at least in Figs. 2B, 5, and 10.

The Tai reference shows in Fig. 1 a "chip 11, integrated circuit 12 with contact pads 13, insulating layer 14, metallic contact 15 which is preferably solder-wettable as, e.g., when consisting essentially of a Ti-Pd-Au or Cr-Cu-Au alloy, and solder metal 16. Beveled portions of chip 11 preferably have a depth which is at least 2 mils." *Col. 2, lines 45 - 50*. The figure clearly shows electronic structures formed on the smaller (bottom surface). The figures and the description make no mention that anything is formed on the larger (upper surface). Consequently, it is earnestly submitted that Tai does not anticipate the present invention as recited in claims 26 - 33, 35, 36, 38, 39, 43, 44, 49 - 51, 53 - 55, 58 - 62, 64 - 67, 79 - 82, 86, 89 - 91, 93, 98 - 102, 142, 143, 145, 151 - 153, 156 - 158, 164 - 168, 171, 173 - 178, and 189.

Furthermore, Tai does not show "a beveled side connecting said first surface to said second surface." Instead, Tai shows in Fig. 1, the upper surface is connected to the lower surface via a vertical side wall portion, followed by a beveled portion. For at least this reason, Tai does not anticipate the present invention as claimed.

Section 102 Rejection (Ng et al.) - Claims 26, 30, 34, 39 - 42, 48, 49, 86, 104, 106 - 109, 123 - 129, 140, 141, 144, 146 - 150, 172, and 186 - 188

The rejection begins on page 13 of the Office action.

Independent claims 26, 49, 104, and 123 have been amended. The claims depending from these independent claims are believed to be allowable based on the allowability of their respective base claims.

The present invention is further directed to an electronic component. An aspect of the invention as recited in claim 104, for example, is that the electronic component comprises a "first surface ... [having] a conductive contact disposed atop said first surface." The component further includes "a second surface ... having a smaller area than said first surface." Claim 123 similarly recites an LED having "a bottom surface smaller in area than said top surface ... said top surface having electronic layers formed thereon to produce light."

Ng et al. clearly show in Figs. 2 and 4, a chip 14 having pads 18, 20, and 22 formed on a top (smaller) surface. "The top of the chip 14 and the bottom of the chip 15 shown in FIG. 2 respectively constitute the so-called active sides thereof. Includes on the active side of each chip are standard elements such as transistors (not shown), alignment marks (not shown), etc. Also includes thereon are multiple relatively small-area conductive pads. Three such pads 18, 20, and 22 on the chip 14..." *Col. 3, lines 23 - 30*. Ng et al. do not show a "first [larger] surface ... [having] a conductive contact disposed atop said first surface." Ng. et al. therefore do not anticipate the present invention as recited in claims 6, 30, 34, 39 - 42, 48, 49, 86, 104, 106 - 109, 123 - 129, 140, 141, 144, 146 - 150, 172, and 186 - 188.

Section 103 Rejection (Ng et al. and Fang et al.) - Claims 45, 46, 94 - 97, and 110

The rejection begins on page 17 of the Office action.

Claims 45, 46, 94 - 97, and 110 are believed to be patentable over the combined teachings of Ng et al. and Fang et al. based on the allowability of their respective base claims, namely, independent claims 26, 86, and 104. Fang et al. was cited for showing an LED and in particular a GaAs LED. However, Fang et al. do not show or suggest a "first surface ... [having] a conductive contact disposed atop said first surface" wherein "a second surface ... [is] smaller area than said first surface." *Claim 104*. As discussed above, this aspect of the invention is not shown or suggested by Ng et al. Thus, neither the Ng et al. nor the Fang et al. references considered separately or in combination suggest this aspect of the present invention.

Section 103 Rejection (Tai and Gardner et al.) - Claims 63, 87, 154, 155, 169, 170, and 190 - 192

The rejection begins on page 19 of the Office action.

Claims 63, 87, 154, 155, 169, 170, and 190 - 192 are believed to be patentable over the combined teachings of Tai and Gardner et al. based on the allowability of their respective base claims, namely, independent claims 59, 86, and 189. Gardner et al. was cited for showing an LED. However, Gardner et al. do not show or suggest "a beveled side connecting said first surface to said second [larger] surface [with] electronic structures formed on said second surface." *Claim 26*. As discussed above, this aspect of the invention is not shown or suggested by Tai. Thus, neither Tai nor Gardner et al. considered separately or in combination suggest this aspect of the present invention.

Section 103 Rejection (Tai and Ng et al.) - Claim 68

The rejection begins on page 21 of the Office action.

Claim 68 has a base claim in claim 59. Claim 59 recites "said first surface connected to said second surface only by said etched sides, said first surface being larger in area than said second surface and having electronic structures formed thereon." As discussed above, Tai does not show or suggest "said first surface connected to said second surface only by said etched sides." Also as discussed above, neither Tai nor Ng et al. show or suggest "said first surface being larger in area than said second surface and having electronic structures formed thereon."

Section 103 Rejection (Tai and Fang et al.) - Claims 69, 84, 85, 94 - 97, and 103

The rejection begins on page 21 of the Office action.

Claims 69, 84, 85, 94 - 97, and 103 are believed to be patentable over the combined teachings of Tai and Fang et al. based on the allowability of their respective base claims, namely, independent claims 59, 79, 86, and 99. Fang et al. was cited for showing an LED. However, Fang et al. do not show or suggest "a top surface, a bottom surface that is smaller than said top surface, and etched sides that connect said top surface with said bottom surface, said top surface having formed thereon an electronic device." *Claim 79*. As discussed

above, this aspect of the invention is not shown or suggested by Tai. Thus, neither reference to Tai or to Fang et al. considered separately or in combination suggest this aspect of the present invention.

Section 103 Rejection (Tsunetsugu et al. and Gardner et al.) - Claims 72 - 74, 76 - 78, 159, and 160

The rejection begins on page 24 of the Office action.

Independent claim 72 has been amended. Dependent claims 73, 74, 76 - 78, 159, and 160 which depend from claim 72 are believed to be allowable based on the allowability of their base claim.

The present invention is further directed to a semiconductor microstructure. The structure includes a shaped block having a first surface (with a first area) and a second surface (with a second area). An aspect of the present invention as recited in claim 72 is "said first area being larger than said second area, an edge that is adjacent both said first surface and said second surface being sloped, said first surface having formed thereon electronic structures."

As understood, Tsunetsugu et al. show in Fig. 8 blocks 11 which appear to fit into recesses 14a. As further understood, Fig. 13 of Tsunetsugu et al. appear to show cross sections (C) and (D) of the blocks 11. The cross sections shown in Figs. 13(C) and 13(D) do not show blocks 11 have "an edge that is adjacent both said first surface and said second surface being sloped." Rather, there is a vertical side adjacent the bottom (larger) surface, followed by a sloped side adjacent the upper (smaller) surface. Furthermore, Tsunetsugu et al. do not show "said first [larger] surface having formed thereon electronic structures." Rather, the upper (smaller) surface in both Figs. 13(C) and 13(D) appear to be shown with devices formed thereon.

As discussed above, Gardner et al. also do not show these aspects of the invention. Gardner et al. was cited for showing an LED. Consequently, Tsunetsugu et al. or Gardner et al. considered separately or in combination do not render obvious the invention as recited in claims 72 - 74, 76 - 78, 159, and 160.

Section 103 Rejection (Ng et al. and Gardner et al.) - Claims 87, 169, and 170

The rejection begins on page 26 of the Office action.

Claims 87, 169, and 170 are believed to be patentable over the combined teachings of Ng et al. and Gardner et al. based on the allowability of their base claim 86. Fang et al. was cited for showing an LED. However, Gardner et al. do not show or suggest a "first surface having an areal measurement larger than an areal measurement of said second surface, said first surface having a conductive contact disposed thereon." *Claim 86*. As discussed above, this aspect of the invention is not shown or suggested by Ng et al. Thus, neither the Ng et al. nor the Gardner et al. references considered separately or in combination suggest this aspect of the present invention.

Section 103 Rejection (Fang et al. and Tai) - Claims 111 - 122 and 181 - 185

The rejection begins on page 27 of the Office action.

Independent claims 111 and 118 have been amended. Dependent claims 112 - 117, 119 - 122 and 181 - 185 are believed to be allowable over Fang et al. and Tai based on the allowability of their respective base claims 111 and 118.

The present invention is further directed to an LED. An aspect of the present invention as recited in claim 111 is a semiconductor block having "tapered sides defining at least a beveled edge adjacent both said first and second surfaces, said first surface larger in area than said second surface, said first surface having formed thereon electronic structure for producing light." Though Fang et al. show an LED, they do not show these quoted aspect of the present invention as recited in claim 111. As discussed above, Tai does not show "said first [larger] surface having formed thereon electronic structure."

In addition, it is respectfully and earnestly submitted that one of ordinary skill would not combine the two references in the manner proposed in the Office action. Fang et al. discuss conventional deposition techniques and diffusion techniques to form their LED structure. Fang et al. do not show the formation of blocks that fit into a cavity. Rather, they discuss the use of deposition and diffusion to form the layers shown in Fig. 1. There is no issue of alignment of blocks, because there are no blocks. One of ordinary skill in the art would not interpret Fang et

al. as producing blocks. Consequently, there is no motivation to incorporate any block manipulations that might be taught by Tai.

Thus, the references to Fang et al. and to Tai considered in combination or separately do not suggest the invention as recited in claims 111 - 122 and 181 - 185.

CONCLUSION

All claims now pending in this Application are believed to be in condition for allowance. The issuance of a formal Notice of Allowance at an early date is respectfully requested.

If the Examiner believes a telephone conference would expedite prosecution of this application, please telephone the undersigned at 650-326-2400.

Respectfully submitted,



Rodney C. LeRoy, Reg. No. 53,205 for
George B. F. Yee, Reg. No. 37,478

TOWNSEND and TOWNSEND and CREW LLP
Two Embarcadero Center, Eighth Floor
San Francisco, California 94111-3834
Tel: 650-326-2400
Fax: 415-576-0300
GBFY:cmm
60065398 v1